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CONTINUING "THE ELEMENTARY SCHOOL TEACHER"

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EDUCATIONAL NEWS AND EDITORIAL COMMENT

The Endowment of Elementary Education

Superintendent Blewett has established by personal gift a fund for the assistance of the teachers of the St. Louis schools who are in need of financial help, and at the same time has provided for the professional improvement of teachers in service through the use of a portion of the same fund. He has not encumbered the fund by giving it a personal designation. In this he is undoubtedly wise. Other citizens of St. Louis are now free under the form of his gift to enlarge this fund until it ultimately comes to a point where it can serve in the largest way the two ends which Superintendent Blewett had in mind.

Three cities of the United States are now provided with funds of this type. Indianapolis has a fund which grew out of a bequest. The city of Pittsburgh has a fund which probably came from Mr. Frick. All of these cases illustrate in a very interesting way the possibility of endowing public education of elementary grade, as well as higher institutions of learning.

The communication in which Mr. Blewett established the fund is reported in the proceedings of the Board of Education of June 13, 1916, as follows:

> Among the teachers in the corps of any large school system there are always some who, in spite of industry and prudence, fall under crushing

financial distress during their service or subsequent to it. And this condition is frequently caused by the teacher's sacrifice of self for others in her family.

There are also some of unusual talent and ambition whose family obligations and limited means shut them out from the opportunities and benefits of the higher professional training for which they are capable and which they earnestly desire.

It is to the best interest of the school system that provision be made to relieve such distress and to open opportunity to such ambition. The Board of Education of the City of St. Louis has never been indifferent to cases of distress or of cramped opportunity, but it has no authority under the law to aid such cases by money from school funds. If relief is to come, it must come from individual benevolence.

Year after year men and women of St. Louis, to whom vast wealth has come as the reward of industry, integrity, and intelligence, are finding their greatest joy in gifts to charitable or educational institutions.

The fact that the public schools are supported by all the people has caused such benefactors to be oblivious of the needs in the administration of the public schools that cannot be met out of public funds.

The time is sure to come when such men and women of large wealth and magnanimous public spirit will recognize in endowments for such aid of teachers connected with the public schools the best opportunity for service to the educational institution of all the people.

For the encouragement of such endowments I believe a foundation should be established under a general title which will permit of special gifts under it that may be designated and administered as the donors shall indicate and direct, and which shall not be in discord with the purposes of the foundation.

To lay this foundation it is my intention to give one hundred dollars in trust to a board of trustees to be known as "The Board of Trustees of the St. Louis Public Schools Foundation for the Relief of Distress and for the Advancement of Professional Training," which board is to consist of the Superintendent of Instruction of the St. Louis public schools, the Secretary and Treasurer of the Board of Education, the Comptroller of the City of St. Louis, a citizen appointed for a term of four years by the Judge of the St. Louis probate court, and a member of the teaching corps of the St. Louis public schools elected by that corps for a term of two years.

As a fund on this foundation, it is my intention to give fifty thousand dollars, the income from which shall be used for the relief and encouragement of teachers in the St. Louis public schools under the general provisions of the foundation. This gift shall be a memorial to my beloved and honored wife and to her parents, Charles Bunyan Parsons and Jane Elizabeth Parsons, and shall be known as "The Jessie Parsons Blewett Fund."

I request that the Board of Education approve placing its above-named officers on this board of trustees, and authorize incorporating in the Annual

Report of the Board of Education the reports of the board of trustees of the foundation.

The Chicago Situation

Early in the month of June the Board of Education of the city of Chicago changed its rule with regard to the appointment of teachers. For a number of years past the Board has operated under a rule which provided that any teacher who was not reported as unsatisfactory by the principal and assistant superintendent under whom he or she served should be reappointed for the next following year. This rule operated to create a permanency of tenure in the school system in such high degree that only a very small percentage of the teachers were ever dropped because of unfavorable marks by the supervisory officers.

Earlier in the year the Board of Education had passed a rule which provided that no member of the teaching corps of the city should be a member of a labor union. This earlier rule was aimed directly at the Teachers' Federation, which is organized as a labor union and is regarded by many members of the Board of Education as a menace to the organization and conduct of the school system. This rule providing that teachers shall not be members of a labor union was immediately made a subject of litigation, and the lower courts have issued an injunction against its enforcement. This litigation is being continued at the present time (early in August) in the higher courts.

The action of the Board in changing its mode of reappointing teachers was immediately interpreted, especially by members of the Federation, as a device on the part of the Board of Education to dismiss from the teaching body those who have been energetic in the service of the Teachers' Federation. All of the later discussions make it clear that this was undoubtedly the purpose of the Board in changing its rule with regard to the appointment of teachers. A storm of protest followed the change in the rule of the Board of Education, but the Board acted as it had evidently planned to act when it changed its rule and dropped a number of the leading members of the Federation, in spite of the fact that they had been marked by their principals and superintendents as good or excellent in school work.

It is stated by the members of the Board of Education that principals and superintendents are afraid to mark members of the Federation with a low grade. It is explicitly stated that the merit system, as it was supposed to exist under the old rule, is not working and that the schools are suffering because of insubordination and inefficiency among the teachers.

In the meantime, it was evident at the meeting of the Board at which the teachers were dropped that political influences are likely to enter into appointments if these appointments are not controlled rigidly by a merit system. Certain individuals who were listed to be dropped were put back on the appointment list by a compromise made on the floor of the Board.

The action of the Board was followed by a series of public hearings before a committee of the city council. During the course of these hearings charges and countercharges were frequently made against the Federation and against the members of the Board of Education.

It is difficult to describe a situation of this sort without assuming a partisan attitude toward any of those who are concerned. Two general principles can, however, be advocated by all neutrals and have been accepted by all parties in the controversy. One is that the schools should be operated in such a way as to secure the highest degree of efficiency in the classroom. There seems to be no question in the minds of all that the Chicago schools are suffering under the present conditions from a lack of rigid adherence to the efficiency standard.

The second general principle which is agreed to on all sides is that school administration should be so organized that extraordinary measures for the elimination or advancement of teachers will be unnecessary. It is a confession of fatal weakness in the organization of any school system that it must resort from time to time to exceptional rules and measures in the appointment of its teaching staff. Exceptional measures always indicate that there was ineffective organization in the history of the system.

The way out of the present difficulty seems to be perfectly clear. A well-organized system of scientific supervision, which will adhere rigidly to the demand for efficiency in the classroom, should

be set up. Whatever gets in the way of this system ought to be ruthlessly eliminated. The acceptance of the plan of an impersonal scientific supervision by the Board of Education would undoubtedly relieve the tension a great deal. If it adopted these principles, the Board would be in the advantageous position of standing for the merit system in its most highly developed form. At the present time it is criticized by its opponents as having broken down the merit system. The Federation, which has in the past been thought of as opposed to the merit system, is now thoroughly committed to this system. Any of its activities in the future which are opposed to the system will immediately lay it open to the charge of insincerity.

The controversy undoubtedly has been very harmful to the school system of Chicago, but if it brings out the principle of efficiency with sufficient clearness to secure the support of all the citizens and of the school system itself, the controversy wil not have been without its compensations. The school system of Chicago is not doing as high a grade of work as are many school systems that are smaller and more manageable. The school system of Chicago ought to reflect the energy and efficiency of the city of which it is a part. Chicago is the important commercial center of one of the best school regions in the United States. Progressive school activities and progressive forms of organization are all about the school system of Chicago. A system of impersonal, scientific supervision would do much to bring the school system of this city to the level which it ought to occupy as a part of the social organization of a metropolis.

The St. Louis School Survey

The city of St. Louis has a Board of Education which is organized under a charter granted by the state. This Board of Education is in no wise responsible to any other branch of the city government. It levies its own taxes directly under state law and it has full control of the school organization. For a period of years the school system has grown steadily until now it has reached the limit of its taxing power under the state charter. Up to this time the school system has constructed its buildings and paid for its operations out of the annual

tax. There is no bonded indebtedness and there has been no sharp separation between the income which went to current expenses and that which was assigned to the building account.

St. Louis has reached, as have all of the great municipalities, a point of financial stringency. The alternatives which are presented to the system under these conditions are those of reducing the cost of instruction in the schools or securing a bond issue for new buildings. The latter alternative was the one which the Board finally came to regard as necessary. When it presented to some of the leading citizens the proposal for a bond issue, the answer was made that a survey ought to be organized, in order to assure the citizens that the school system was in need of funds. This demand for a survey did not grow out of any dissatisfaction with the school system or any skepticism on the part of the citizens, but was, rather, a natural demand for definite assurance of the need of a bond issue.

Early in May a survey was organized. Coming as it did at the end of the school year, the survey was confronted by some unusual difficulties because of the limited time which could be devoted to the work before the close of school. It was, therefore, necessary to organize a large survey staff and to distribute the work in a good deal of detail. The staff brought together for this purpose was as follows: Superintendent H. C. Morrison of the state of New Hampshire, who made an investigation of the attendance department and of the general organization of the system; Professor W. F. Dearborn of Harvard University, who examined the special schools and the methods of selecting the children for these schools; Deputy Commissioner A. B. Meredith of New Jersey, who examined the high schools; Dr. E. A. Peterson of the Cleveland school system, who made a study of the health department; Mr. W. R. McCornack of the Cleveland school system, who, together with Professor F. B. Dresslar of the Peabody Institute, examined the buildings; Superintendent S. O. Hartwell of Muskegon, Michigan, who made a report on the overcrowded condition of the classrooms.

The elementary schools were tested in penmanship by Professor F. N. Freeman of the University of Chicago; in reading, by Dr. William S. Gray, also of the University of Chicago; in drawing, by F. H. Daniels, supervisor of drawing in Newton, Massachusetts;

in music, by J. B. Cragun of the School of Education of the University of Chicago. Mr. G. A. Mirick of Cambridge made a thoroughgoing inspection of the general classroom work in the elementary schools. Professor J. F. Bobbitt of the University of Chicago made a report on the course of study in the elementary schools. Professor G. W. Ehler of the University of Wisconsin has prepared a report on physical education and play activities in the system. Dr. H. O. Rugg and P. S. Kingsbury of the University of Chicago reported on finances. Leonard P. Ayres is co-operating in the financial survey.

The details of these various reports will be published in September. In the meantime it may be reported in general that the school system has been found to be in a very satisfactory condition. The general organization is highly effective, and the tests that were tried in the schools show, in sharp contrast with the results in a number of other systems, a very high degree of success and a very consistent type of achievement on the part of pupils and teachers.

The survey was organized under the general direction of Professor Charles H. Judd of the University of Chicago.

The School Survey in San Francisco

The city of San Francisco is being surveyed by a corps of assistants selected by the Commissioner of Education of the United States. The survey staff consists in part of members of the Bureau of Education. In addition, Professor John W. Withers of St. Louis and Professor Charles McMurray are preparing a joint report on the elementary schools. Professor Dresslar is preparing a report on the school buildings. Professor J. Stanley Brown of Joliet is preparing a report on the high schools. Henry Turner Bailey is preparing a report on the art instruction in the schools.

The school system of San Francisco has long been known as a system suffering from certain unique difficulties. The county of San Francisco is coincident in its territorial boundaries with the city of San Francisco. The school superintendent of the city is the county superintendent. He is elected by popular vote and is a man without special technical preparation for the position which he

occupies. The Board of Education is a paid board. The members of the Board of Education are appointed by the mayor. A complete board is appointed by each mayor during his period of office.

Added to these difficulties arising from the political organization of the city are the unique difficulties that followed the great fire. The buildings were, of course, destroyed, and the system found itself under the necessity of reconstruction on a large scale. During the period of reconstruction the principals were very largely in charge of the organization and housing of their schools. One unfortunate element in this situation was that the salary of the principal was dependent upon the size of the school. Consequently each principal has been very vigorous in securing pupil membership in the school over which he has had charge. Since the districts were not clearly determined by board action, it frequently resulted that the reorganized schools were in very close proximity to each other.

The survey of the school system of San Francisco will be awaited with great interest in view of the complications described.

The School Survey of Los Angeles

The school system of Los Angeles has been one of the most aggressive in the country in introducing new and elaborate forms of organization. This system has been known as the most active center in the country in respect to the development of intermediate schools. High schools have been carried to a degree of elaborateness of organization seldom paralleled even in the state of California, where secondary education has been developed to a high level.

One of the natural consequences of a rapid and elaborate development of this sort was an increase in school expenditures, and a further result was the growth of a spirit of criticism among the citizens. The question arose whether the city could properly support so elaborate a school system, and whether the system is doing consistent work justifying the large expenditure.

The Board of Education decided to seek the advice of a commission of experts outside of the system. This commission was organized through President Judson of the University of Chicago and President Butler of Columbia University. Professor Jessup

of the University of Iowa and Mr. Shiels of the New York City Department of Education were appointed to make the report. Their report has not yet been published. It is ready in manuscript form, however, and certain of its items are of general interest.

A table was prepared showing the comparative records in high school of pupils who graduated from the ordinary grammar grades and of pupils who graduated from the intermediate schools. The text discussing the results obtained in this table is as follows:

> Of the pupils who did not attend intermediate school, 14, or 1 per cent, completed the [high-school] course in three years (12 of this group completed this course with extra credits); 82, or 7 per cent, completed the course in three and one-half years, 51 of whom received extra credits; 209, or 17 per cent, completed the course in four and one-half years, and 5 per cent completed the course in five years.
>
> Of the pupils who attended the intermediate schools, 2 per cent finished [the high school] in three years, 19 per cent in three and one-half years, 69 per cent in four years, 8 per cent in four and one-half years, and 2 per cent in five years.
>
> Thus it may be seen that 90 per cent of the pupils who attended intermediate school completed the high school in four years, or less, whereas only 78 per cent of the non-intermediate-school students graduated from the high school in four years or less. This would indicate that the intermediate-school students are making better progress in the high school than the students from the non-intermediate school.
>
> If it should be established that the figures indicated in the table above become truly descriptive of the situation from year to year, so that there is an expectancy of 90 per cent of the intermediate-school students entering high school being able to graduate in four years or less, as compared with 78 per cent of the elementary-school students who are able to graduate in four years or less, it will mean that the intermediate school contributes much in the matter of saving time on the part of students who go through the public school.
>
> In case this is true, the apparent increase in expense in the intermediate schools will be measurably offset by a decrease in cost in the high school. In the figures above, 22 per cent of the students who entered the high school from the non-intermediate schools spent more than four years before graduating. This involves considerable expense at the present per capita cost of instruction. The fact that one student out of twenty spends a full year extra before graduation and that one student out of six spends one-half a year extra before graduation, will, if the number becomes large, contribute heavily toward the cost of high-school instruction. Again, the fact that only 8 per cent of the students who come to the high school from the non-intermediate school are able to finish in less than four years, is of importance in comparison

with the fact that 21 per cent of the children who come from intermediate schools are able to complete the high school in less than four years.

It will be unwise to make too hasty inferences from these figures; it is too early to make final judgments. As the data accumulates within the next few years these ratios may change. Nevertheless, it is significant that the figures, as far as they go, indicate not only that the intermediate-school student makes a better record, but that he costs less to educate in the high school than does the non-intermediate-school student. Indeed, the figures indicate that the saving effected thus may partially offset the added expenditures earlier in the school career.

Another important matter which was brought out in this survey was the lack of consistency in the Los Angeles system, as at present organized, in the distribution of teachers in the various schools. The following quotation brings out the details of this case:

With the rapid development of the intermediate schools and the vast number of adjustments necessary in their organization, wide variation has resulted in the distribution of teachers in the various schools. Some schools have used relatively many more teachers per thousand children than others. For example, the number of students per teacher in Boyle Heights is four more than in Custer Avenue; that is to say, Custer Avenue averages 19.31 pupils per teacher, whereas Boyle Heights averages 23.94. This makes a difference of ten teachers per thousand students, a difference in cost of from $12,000 to $16,800.

Another example of this is seen in the case of the McKinley and Boyle Heights schools. Within the past two years the McKinley school has secured an additional teacher for each sixteen students. Boyle Heights has had an increase of more than one hundred students, with one less teacher. It is true that Boyle Heights, a few years ago, had relatively fewer children than the McKinley school. Nevertheless, the difference between these schools is significant. The number of pupils per teacher in the McKinley High School, March, 1916, was 20.46; at Boyle Heights, 23.94.

One interesting result of the Los Angeles survey was the appointment of Mr. Shiels to succeed Superintendent Francis in the superintendency of the city school system. Mr. Shiels begins his career in Los Angeles announcing that he will effect substantial economy in the organization of the schools. It is to be hoped that he will be able to do this without in any wise reducing the efficiency of the school organization or curtailing the progressive lines of work which the school system has undertaken.

Activities of the General Education Board

The General Education Board announces that it is about to complete a study of the public-school system inaugurated at Gary, Indiana. The purpose is that a full and authoritative account of this interesting experiment in public education may be available for study and use throughout the country.

The Board has employed a staff of educational experts who have already devoted five months to a first-hand study of the purposes, methods, and costs of the system at Gary and the results actually achieved there. This work was undertaken at the invitation of the School Board of Gary. The results will be embodied in a comprehensive volume to be issued by the Board.

Abraham Flexner of the General Education Board is directing the study, assisted by Dr. Frank P. Bachman, formerly associate superintendent of schools in Cleveland, Ohio, who has been on the ground continuously. Specialists who are dealing with particular fields are: Professor C. R. Richards, director of Cooper Union—vocational and industrial instruction; Mrs. Eva W. White, director of the extended use of public schools of Boston, Massachusetts—domestic science and arts; Professor George D. Strayer, Teachers College, Columbia University—administration, organization, and supervision; S. A. Courtis, director of research in the schools of Detroit, Michigan—classroom testing; Lee K. Hanmer, director of the Department of Recreation and Playgrounds of the Russell Sage Foundation—physical training and recreation; Professor Otis W. Caldwell, University of Chicago—science; Frank L. Shaw, recently with the Cleveland school survey—statistical work; Ralph Bowman, formerly of the Bureau of Municipal Research—cost accounting.

In addition to the work at Gary, and for the purpose of studying the school possibilities of the unusually gifted child, the General Education Board has made an appropriation for the use of Professor Guy M. Whipple of the University of Illinois. Up to this time much special study has been devoted to improving the education of defective children, but comparatively little attention has been devoted to a systematic and thorough study of the talented child.

Professor Whipple will endeavor to find out how early in their school life gifted children can be distinguished, and how much school time and energy they can economize, as well as how much additional training and mental equipment they can obtain during their school years.

The Board has also authorized a study of the junior high school, which is being widely experimented with in different sections of the country. As ordinarily conceived, the junior high school takes over Grades VII and VIII of the elementary school and the first year of the high school, reorganizing them so as to bridge the gap between elementary and high schools. The junior high school also endeavors to recognize individual differences more adequately than the elementary school has done. The topic was debated very earnestly at this year's meetings of the National Education Association, and it is extremely important that a critical study on the ground should be made of the curriculum, methods of teaching, organization, and results thus far obtained in the junior high schools now in operation at various points. The study will be made by Professor Thomas H. Briggs of Teachers College, Columbia University, who will devote at least six months to visiting these institutions.

Professor Briggs will prepare a volume on the subject, which will be published and widely distributed by the General Education Board.

EDUCATIONAL WRITINGS

Professor Dewey has brought together in a single volume[1] his philosophy of education. Up to this time his educational writings have been scattered and have dealt with single problems. At times he has written theoretical papers dealing with such matters as the nature of interest and discipline. At other times he has described concrete school situations, as in his recent book on *Schools of Tomorrow*. Throughout all of these earlier writings there has appeared a certain fundamental view regarding school work and school organization. Not only so, but the books which Professor Dewey has written on subjects other than education also exhibit his fundamental social philosophy and furnish to the student of education the material out of which a general view can be constructed. This fundamental view, which has been expounded in part, has attracted many sympathetic students. These and many new students will be helped and stimulated by the fact that Professor Dewey has brought together all of his principles into a single statement.

Like other great educational reformers of our generation, Professor Dewey has contended for an enlargement of the scope of education. Education is not merely a matter of training the mind in the acquisition of certain items of information. Education is a part of the whole social scheme and is intended to enlarge the life of the individual, not only in matters of intellect, but also in matters of habit and social adjustment, in emotional reactions and appreciation of the world.

This broader view of education affects the school, for it calls for a richer course of study and a modification of the methods of discipline and instruction. It reaches beyond the school, however, and becomes a basis for a social philosophy. Education thus

[1] *Democracy and Education.* By John Dewey. New York: Macmillan, 1916. Pp. 434.

becomes practically synonymous with the whole concept of individual development and social enlargement.

One should distinguish, as he reads Professor Dewey's book, between a general philosophy of education and a practical application of this philosophy in school organization. This distinction is not made by Professor Dewey, and undoubtedly would not be regarded by him as necessary. He would assume that the ideal school should realize all of the ends which he describes as the true ends of a complete educational system. Wherever school organization, as at present organized, is incapable of following the ideals laid down in a complete philosophy, the school must be condemned as incomplete and ineffectual. Wherever social conditions make it impossible to realize this complete ideal of education, social ideals are in need of revision. Dr. Dewey would undoubtedly assent to the statement that his philosophy is frankly a philosophy of ideals—of remoter and more complete goals than can be achieved in any single institution of the present day and generation. He would hardly admit these distinctions, however, in such a way as to give to the practical teacher any ground for complacency in the shortcomings of the present school system.

Taking Professor Dewey's philosophy, then, as it stands, we find that he is constantly reiterating the statement that education involves the whole social environment. Indeed, environment is nothing more nor less than the conditions which surround the individual in his growth. Whatever these conditions are, the adjustment of the individual to these conditions as a general life problem is synonymous with the educational problem. Whatever is in social practice must be brought into the child's experience and must be made a vital part of that experience. Thus society's industrial activities must not be omitted from the educational scheme. Indeed, the divorcing of intellectual life from industry was one of the fallacies of an older dualistic philosophy. There is no justification in modern society or in modern thinking for this dualism that separates industry from social life. There is no justification for the separation of individual behavior from the general social demand. Indeed, it is only through practical efforts to become a part of society that the child realizes the demands of society upon him.

Mere thinking about social situations is not desirable in the school. We ought to plunge the pupils immediately into forms of social endeavor which will train them in the realization of society's needs and society's modes of conduct. According to this philosophy, there is no reason why the school should be regarded as an agency which prepares for later life. If the life of the child is fostered at each stage of his development in a social environment which is natural to the life of that period, there will ultimately grow up an adjustment of the child to society which will be the true education of that child. Such an adaptation to social needs ought to go on indefinitely. The school merges, therefore, according to this philosophy, directly into the later life of the adult. Whatever individual education is acquired in the school ought to go on until it is consummated in individual life of the later period.

The setting of any artificial exercise as the goal of educational training is to be resented as formalistic and distracting. It takes a child away from a perfectly natural problem which grows out of the present environment and aims to substitute something that is so remote from his present life that it will give him a wholly artificial attitude, not only toward the present problems, but also toward the later problems which he must face as an adult.

It is evident from this general statement that Professor Dewey is very much in sympathy with play as a formula for education. Play is a form of activity which is of interest because it realizes the child's desire for activity. It does not lay so much emphasis on results as it does upon the mere performance of the activities themselves. It is also evident from this philosophy that Professor Dewey will be especially interested in geography and history, because these are the two bodies of intellectual material that most fully reveal the life of society as a whole.

The later chapters of the book deal with certain broader theoretical considerations. Here one finds the definition of the philosophy of education and a treatment of the theories of morals and of knowledge which are involved in the author's general positions. One finds also a discussion of the antithesis between the individual and the world and between vocational and cultural aspects of the course of study.

The book is a very stimulating source of ideas for anyone who wishes to systematize his general thinking on educational theory. The book has in it very few discussions of concrete educational situations. It is in no sense of the word a book of methods or a book of concrete prescriptions about school activities. It is a philosophy of education rather than a handbook on school organization. It is one of a group of books that have recently appeared summarizing the general theoretical thinking of philosophical students of educational problems. It is in sharp contrast with the empirical investigations which are being made in many quarters dealing with actual school situations, and it represents a type of thinking which will undoubtedly be regarded by many readers as remote from the actual school practices.

It will be difficult to evaluate this general statement of Professor Dewey without a clear recognition of the motives of the author and of his general point of view. For example, it would be extraordinarily difficult to say that this doctrine does or does not work in the actual organization of a school system. If one could find a school system that aimed to realize Professor Dewey's ideals, but did not succeed well with what is ordinarily demanded in a school system, the defense for such a school system would doubtless be that it does not aim to meet the ordinary demands made on the public schools. On the other hand, if a school system does not succeed in achieving all of the ends described in Professor Dewey's philosophy, its officers are likely to offer the defense that it is quite impossible to accomplish within any school system all that is demanded of this general philosophy of education. As pointed out above, this philosophy reaches into the mature life of the individual, and the consummation of an education under this philosophy is part of the consummation of individual social adjustment even in its most remote adult stages.

At this point we may with propriety enlarge by way of criticism the statement that was made in the earlier paragraphs of this review. A school system as organized in practical life deals only with one phase or portion of education. The school cannot assume full responsibility for all of the activities of children; nor can it extend its influence beyond the early period of life during which

a child is acquiring some of the fundamentals of knowledge. The ordinary school must, therefore, anticipate some of its own limitations. It must decide that it is quite impossible to follow the individual into the later stages of adult life, and it must take advantage of its organized contact with the children of a community to anticipate so far as possible some of those later needs which are recognized in Professor Dewey's philosophy, but are pointed out as dangerous to incorporate into the early stages of education. It is indeed dangerous to try to teach a ten-year-old child about the adjustments of society which he will not need until he is twenty, but if society is just about to lose its organized hold on a ten-year-old child and if society cannot depend upon this child to carry on his own education in an intelligent way, it is probably economical for society to run the risk of being formal; society probably ought to give this ten-year-old child as much preparation for later adult life as can possibly be supplied.

Such considerations as these may help us to draw the distinction between the philosophy of education and the empirical necessity of conducting a school. The school must have a program; that program must be limited in its compass. The school must deal with certain situations that can be systematized and controlled. There are many social situations which the school cannot present and cannot organize in its general systematic scheme of education. Professor Dewey's philosophy becomes in the light of such difficulties as these a statement of the goals toward which education should progress, a statement of the ideals which should be attained, but it cannot be safely looked upon as a daily program for a concrete school situation.

As the first output of the efficiency department of the school system of Dubuque, Iowa, there has appeared a monograph dealing with reading.[1] This investigation had for its purpose the measurement of "the efficiency or worth of the various systems of primary reading" which are used in Dubuque. The relative efficiency of the various systems was determined by comparing the achievement

[1] *Measuring Primary Reading in the Dubuque Schools.* Dubuque, Iowa: Harris & Anderson, 1916.

of groups of pupils in the mechanics of oral reading and in the rate and quality of silent reading. For this purpose, Gray's Standardized Paragraphs for oral reading and Starch's Silent Reading Tests Nos. 1, 2, and 3 were used. The pupils who were tested were chosen from grades I A, II B, and II A of six schools, one of which used the Beacon system, one the Horace Mann system, and four the Aldine system. In order that the final results might represent as accurately as possible the results secured by the respective systems, all pupils who had come in from other schools and those who had been irregular in attendance were eliminated from each group before the final summaries were made. The results showed that the group which had been taught by the Beacon system was superior to the other groups, both in oral reading achievement and in rate and quality of silent reading.

The problem which was undertaken in this investigation is a very important one. Supervisors and teachers alike are deeply interested in the relative merits of the various systems of primary reading. Any effort which contributes toward an adequate solution of the problem deserves commendation. Furthermore, the value of this study was enhanced by the character of the method which was employed. A series of exercises were arranged which would secure important facts and the results of these exercises were carefully reported. This body of facts, rather than mere personal opinion, was used in drawing conclusions. This type of procedure merits encouragement. An increasing number of classroom problems should be subjected to careful study of a similar character.

The conclusions which were reached in Superintendent Harris' report cannot be accepted as final, however. In the problem under consideration, there are a number of complicating factors. Among these might be mentioned differences in the pupils due to home environment and nationality, differences in previous training of the pupils, differences in the skill of teachers, etc. The report shows that some of these factors were considered by those making the investigation. The fact has already been mentioned that pupils who had come in from other schools and those who had been irregular in attendance were eliminated from each group which was tested. Furthermore, supplementary tests were given to gain evidence that

differences in the achievement of the various groups were not due to differences in the teaching power of the teachers. The report does not cover these matters in sufficient detail, however, to convince the reader that all these differences were adequately considered. Furthermore, only one school using the Beacon system was involved in the test, and the classes in this school were taught by teachers who were admittedly enthusiastic in favor of that system. In view of these facts, it is clear that additional studies must be made before any final conclusions can be reached. It is to be hoped that Superintendent Harris will carry his present investigation further and that in the near future a large number of cities will give this same problem equally serious consideration.

Children's drawings have been made the subject of frequent investigations. The lessons which have been drawn from these investigations have been applied to all of those phases of the course of study which have to do with observation and perception. Where children's drawings show a limited power of recognition, it has been concluded that all of the school subjects taken by these children would suffer from the type of immaturity exhibited in the drawings. On the other hand, where children have acquired through any given type of instruction ability to draw well, it has been assumed that they have learned to see and recognize the objects with which they are brought in contact.

Mr. Ayer[1] has made a careful statistical and experimental study of the different kinds of drawings that are exhibited in laboratory courses where pupils who are studying science have been required to make sketches of the objects which they observe. It appears from his studies that the ability to draw well in the sense of being able to make attractive looking sketches is in no wise correlated with the ability to understand and describe fully the objects studied. Good drawing in this sense of the word is therefore no guaranty of clear recognition of the objects studied. On the other hand, if the pupil is led to make an analysis of the object which he is observing so that he picks out the essential characteristics and recognizes these characteristics in their relations to each other, he

[1] *The Psychology of Drawing.* By Fred Carleton Ayer. Warwick & York, 1916. Pp. 186.

will make a sketch which is, perhaps, from the artist's point of view rough and irregular, but he will exhibit the relations truly and he will at the same time cultivate an insight into the characteristics of objects, which insight will serve his purposes as a student of science very much better than anything that accompanies the production of an attractive looking sketch. Analytical drawing is therefore the end to be sought in all scientific studies.

In presenting this thesis, Mr. Ayer has done the very great service of summarizing all of the earlier studies which have been made of children's drawings and of the drawings of primitive people. A large number of the foreign investigations which are not easily accessible to American students of education are included in his chapters on the literature of the subject. The experiments which he tried are described in sufficient detail so that they can be repeated and extended by any investigator who may be interested in following the same line of inquiry. The book is supplied with a general bibliography which will make it serviceable to students of drawing and to students of general education.

The title of Mr. Freeman's treatise,[1] *Experimental Education*, is borrowed from Meumann's German treatise on the same subject. Meumann called attention to the fact that laboratory methods can be employed in the investigation of school problems. He also pointed out that if such investigations are to be made, students of education must apply these methods to school problems in a special way and must not depend upon the psychologist in his general laboratory work to answer the special questions that have to do with the growth of mental activities in school children.

The general treatise which Meumann prepared on experimental education was a cross between experimental psychology and a study of classroom problems. Meumann's book has been the subject of frequent reviews, and some of the material in the German book has been made accessible through brief translations.

The systematic effort to organize a laboratory course which can accompany a course in educational psychology has, however, not

[1] *Experimental Education*. By Frank N Freeman. Houghton Mifflin Co., 1916. Pp. 220.

been worked out by an American author until Professor Freeman published his new book entitled *Experimental Education*. This is a laboratory book dealing with the general processes of learning and with some experiments on the special school subjects. There is also a section on tests. The appendix contains the material for each one of the exercises, so that the laboratory equipment necessary to carry out these experiments is relatively small. The book will be very useful as a textbook in normal schools and college departments of education and will serve to introduce students of education to the technique of laboratory work in educational fields.

The investigations which have been made in scientific education up to this point have been very largely statistical in character. It is relatively easy to get together material for a statistical investigation. It is very much more laborious to work out the details of an experimental investigation. The experimental analysis of school subjects has consequently gone more slowly than the statistical study of these subjects. Just at the point at which statistical investigations are inadequate experimental analysis ought to begin. Statistical investigations show the extent to which whole groups of children exhibit efficiency in various lines, but these statistical investigations do not make it possible to find out the difficulties in which the individual becomes involved when he tries to follow the group as a whole. In order to deal with the individual there must be a careful analysis of the mental and physical processes exhibited by this individual in his learning of school work. This detailed analysis of the individual's difficulties is, as we have pointed out above, an elaborate and slow process as contrasted with the examination of the group by a statistical method. The importance, however, of analyzing the individual's difficulties can hardly be a matter of dispute and Dr. Freeman has rendered a service to the science of education in making available for the training of students certain typical experiments which will cultivate the laboratory attitude in these students.

One of the most important of the groups of studies which have been made in recent years in regard to elementary schools is that group which deals with the retardation and elimination of pupils.

The effect of these studies has been very great in changing the course of study and the mode of school organization. Indeed, it has been one of the common themes of discussion in educational gatherings to point out the responsibility of the school system for every child who is eliminated from the grades. Suggestions with regard to the modification of the course of study, through the introduction of vocational courses and through the elimination of material which does not seem to be appropriate for all of the children, have very frequently been made. That there was large justification for this attitude toward the problem on the part of the school itself is evidenced by the fact that in recent years the amount of retardation and elimination has been greatly reduced. There is, however, a certain amount of retardation and elimination which the school cannot control.

School officers who have been struggling with these cases will be greatly interested in a recent study made by Mr. Holley,[1] in which he points out clearly the responsibility of the home in a very large number of cases of elimination. The education of the parents is an important item in determining the length of schooling for pupils. If the parents are uneducated and unappreciative of school opportunities, the chances are large that a child will be allowed to drop out. The number of books that a child finds in the home is one of the best indexes of the probable continuation of the child in school. These conclusions are based upon careful studies of a number of school systems in the state of Illinois.

One very interesting and convincing section of the report deals with the school history of a number of adopted children. In these cases, as in the ordinary cases, it is found that the home environment is influential in determining the length of the child's course. These cases serve to eliminate the possibility that we are dealing, in the study of home conditions, with hereditary influences rather than with the daily influences.

A number of incidental facts about the home come out in the course of the investigation. It appears that the father and the

[1] *The Relationship between Persistence in School and Home Conditions.* By Charles Elmer Holley. Published as the Fifteenth Yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1916.

mother, in most of the homes investigated, are in a general way of the same educational level. That is, the school and intellectual associations are important in determining the marriages of the people in the communities investigated. There is no appreciable effect on persistence in school exercised by the size of the family. Truancy as one cause of retardation appears in very striking degree in those families which, because of lack of educational interest, offer the child little encouragement in his school work.

Mr Holley concludes that the popular notion which places responsibility for elimination upon the public school should be modified. This suggested modification of our interpretation of elimination probably ought not to go so far as to relax the efforts which are now being made to correct any deficiencies in school organization, but this report opens up a new series of important considerations for the school. Many of the difficulties here described cannot be overcome directly through the work of the classroom, but the school as a social agency must face the defects of the home quite as much as the defects of the individual child; and the school system as such finds as much a problem of education in the apathy of the homes as in the failure of the individual child to do his work successfully. It is important that the school building, in its wider uses, and the school officers, in their larger undertaking, should reach in some way the families from which retarded and eliminated children come.

DESCRIPTIVE LIST OF STANDARD TESTS

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Numerous inquiries are constantly being made concerning the purpose of standard tests, the places where they may be purchased, and references describing their derivation and use. It is in the hope that a general answer to these questions might be presented in convenient form that the following descriptive list has been prepared. The statements concerning the organization and purpose of the tests are very brief and have been intended to present only the leading features of the tests. Anyone who contemplates using a given test should first read a more detailed description of it in order to determine whether or not it will be of value to him. Such a reference has been given at the end of the paragraph describing each test. Although a great deal of care has been observed in securing the price lists for these tests, it is recommended that all prospective purchasers correspond directly with those selling the tests, in order to secure an accurate estimate of the cost of the tests which are desired.

READING

Brown's Silent Reading Test.—This test is composed of one selection which may be used in testing silent-reading ability of pupils in Grades III to VIII inclusive. The test measures the rate at which the pupil reads silently and the quantity and quality of the pupils' reproduction. Address H. A. Brown, Bureau of Research, 25 Capitol Street, Concord, New Hampshire. Read "The Measurement of Ability to Read," *Bulletin, No. 1*, Department of Public Instruction, Bureau of Research, Concord, New Hampshire.

Gray's Reading Tests.—The oral-reading test consists of a series of standardized paragraphs arranged in the order of increasing difficulty. This test may be used to measure the achievement of pupils of all grades in the mechanics of oral reading. The silent-

reading tests consist of a series of three selections, the first being organized for pupils of the second and third grades, the second for pupils of the fourth, fifth, and sixth grades, and the third for pupils of the seventh and eighth grades. These selections may be used to measure the rate at which pupils read silently and their ability to reproduce and to answer questions concerning what they have read. Address William S. Gray, School of Education, University of Chicago, Chicago, Illinois (oral-reading tests with directions and score sheets, $0.50 a hundred; silent-reading tests, $0.50 a hundred; state number wanted for each grade when ordering). Read *Measuring the Work of the Public Schools*, by Charles H. Judd, Cleveland Foundation, Cleveland, Ohio.

Jones's Scale for Teaching and Testing Elementary Reading—This test consists of a list of words which have been found to occur most frequently in ten or more widely used primers. "These tests will aid to discover a pupil's command of the vocabulary common to first, second, and third grade readers." Address Rockford Printing Company, Rockford, Illinois (manual and material for testing one hundred pupils, $2.00; manual separate, $0.25; cards separate, $0.03). Read *Fourteenth Yearbook of the National Society for the Study of Education*, Part I, pp. 37–43.

The Kansas Silent Reading Tests, designed by F. J. Kelly.—These tests consist of carefully graded groups of exercises for silent study, one for the primary grades, one for the grammar grades, and one for the high school. Comprehension is measured by the accuracy with which questions raised in the exercises are answered. The pupil's ability to read is measured by the number of reading-exercises which he can comprehend accurately within a given time. Address Bureau of Educational Measurements and Standards, Kansas State Normal School, Emporia, Kansas. Test I is for Grades III, IV, and V; Test II, for Grades VI, VII, and VIII; Test III, for Grades IX, X, XI, and XII (price, including directions and record sheets, $0.33 a hundred). Read "The Kansas Silent Reading Test," by F. J. Kelley, *Journal of Educational Psychology*, February, 1916.

Starch's Silent Reading Tests.—These tests consist of a series of selections, one appropriate for each grade in the elementary school.

They may be used to measure the rate of silent reading and the ability of pupils to reproduce what they have read. Address Daniel Starch, University of Wisconsin, Madison, Wisconsin (each test, $0.30 a hundred). Read "The Measurement of Efficiency in Reading," by Daniel Starch, *Journal of Educational Psychology*, January, 1915.

Thorndike's Visual Vocabulary Reading Test.—This test consists of a series of words which must be defined by the reader. The class to which each belongs is indicated by writing "the letter *F* under all words that mean a flower, *A* under all words that mean an animal," etc. The test may be used to measure the ability of pupils to know the meanings of single words seen. It was designed for pupils of Grades IV to VIII inclusive, but may be used in the third grade, and is useful in the high school to some extent. Address Bureau of Publications, Teachers College, Columbia University, New York City (Alpha and preliminary tests, $1.20 per hundred; Tests, H, I, J, K, L, M, N, one hundred each for $0.35). Read "The Measurement of Ability to Read," by E. L. Thorndike, *Teachers College Record*, September, 1914.

Thorndike's Scale Alpha for Measuring the Understanding of Sentences.—This test consists of seven carefully graded paragraphs, each of which is accompanied by a series of questions, the answers for which must be determined as the pupil reads and studies the paragraph. The purpose of the test is to measure the pupil's ability to understand the meaning of sentences and paragraphs. Appropriate exercises have been designed for pupils in Grades III to VIII inclusive, and for pupils in the high school. Address Bureau of Publications, Teachers College, Columbia University, New York City. Read "An Improved Scale for Measuring Ability in Reading," by E. L. Thorndike, *Teachers College Record*, November, 1915, and January, 1916.

ARITHMETIC

Cleveland Arithmetic Tests.—These tests have been called the spiral arithmetic tests because each of the fundamental operations occurs several times: thus, in addition, the simplest exercise consists

of adding pairs of two-place figures; the second series consists of short columns of one-place figures; the third series consists of the addition of fractions of like denominators; the fourth case consists of the addition of longer columns of figures; the fifth case consists of the addition of four-place figures which require carrying forward from one column to the next; the addition of fractions of unlike denominators constitutes the final and most elaborate series. Similar spiral tests in subtraction, multiplication, and division are interwoven with the exercises in addition. This test is designed to measure the ability of different grades to perform increasingly elaborate problems in the fundamental operations. Address Dr. Charles H. Judd, School of Education, University of Chicago, Chicago, Illinois (price, $1.00 per hundred, $8.00 per thousand). Read *Measuring the Work of the Public Schools,* by Charles H. Judd, Cleveland Foundation, Cleveland, Ohio.

Courtis Arithmetic Test, Series V.—This test consists of a series of examples in each of the four fundamental operations. These series have been designed to serve as general measures of ability in each of the fundamental operations. In the test in addition, for instance, the figures are so chosen that all fundamental combinations are presented. "The tests attempt to measure whether or not a child or a class has learned (1) the fundamental combinations, (2) the mechanism of column addition, (3) to carry, (4) to bridge the attention span, (5) to control the effects of fatigue, (6) to work at the proper speed, and (7) with proper accuracy." Address S. A. Courtis, 82 Eliot Street, Detroit, Michigan (price for tests, instructions, and record sheets for a class of forty children, any grade from III to VIII, $0.35). Read *A Manual of Instructions for Giving and Scoring the Courtis Standard Tests* (price $0.75).

Research Tests in Arithmetic.—These tests consist of a series of examples designed to test a pupil's ability in the addition of fractions. Address Department of Educational Investigations and Measurements, Boston, Massachusetts, and secure samples of the test. Read, *Bulletin No. 7,* entitled "Arithmetic," published by the same department.

Rice's Reasoning Tests.—These tests consist of five series of problems designed to test the arithmetical reasoning ability of

elementary-school pupils from the fourth to the eighth grade inclusive. They are referred to here because they represent the initial study made in this field. See "A Test in Arithmetic," by J. M. Rice, *The Forum*, XXXIV (1902), 281–97 and 437–52.

Starch's Arithmetic Test.—This test consists of a single series of problems designed to test the arithmetical reasoning ability of pupils. The problems are arranged in the order of increasing difficulty. Address Daniel Starch, University of Wisconsin, Madison, Wisconsin ($0.30 per hundred). Read "A Scale for Measuring Ability in Arithmetic," by Daniel Starch, *Journal of Educational Psychology*, April, 1916.

Stone's Arithmetic Test.—This test consists (1) of a series of examples in the fundamental operations designed to test one's general ability along these lines, and (2) of a series of problems designed to test the arithmetical reasoning ability of pupils. See Stone's *Arithmetical Abilities and Some Factors Determining Them*, which may be purchased from the Bureau of Publications, Teachers College, Columbia University, New York City.

Drill devices in the fundamentals.—The following devices have been designed by various book companies to secure economy and efficiency in teaching the fundamental operations. Samples and circulars of information should be secured and studied carefully before ordering.

Courtis Standard Practice Tests, World Book Co., Yonkers, New York. Sold in sets containing 48 different tests (50 copies of each test, list price $4.32; 150 copies of each test, list price $7.68).

Teachers Manual for Using Courtis Standard Practice Series (list price $0.25); *Student's Record for Courtis Practice Series* (50 copies, list price $1.00).

Fassett's Standardized Number Tests, Milton Bradley Co., Springfield, Massachusetts. Write for price lists.

Studebaker's Economy Practice Tests in Arithmetic, Scott, Foresman & Co., Chicago, Illinois. 50 different practice cards in a set (set complete in filing case, adequate for one building, $9.50; pupil's record folder, $1.00 per hundred).

Thompson's *Minimum Essentials in Arithmetic*, thirty practice and test sheets, including examples in addition, subtraction, multiplication, division, and denominate numbers, Ginn & Co., Chicago, Illinois (100 sheets, one kind, $0.25; 500 sheets, one kind, $1.00 for test sheets, $0.90 for practice sheets).

WRITING

Ayres's Handwriting Scale.—This scale consists of three series of writing samples arranged in the order of increasing merit from the standpoint of "legibility." The three series are composed respectively of vertical, medium-slant, and extreme-slant writing. This scale may be used in measuring the quality of the handwriting of pupils in the upper elementary grades. Address Russell Sage Foundation, Division of Educational Research, New York City (scale, $0.05 a copy; descriptive bulletin, entitled *A Scale for Measuring the Quality of Handwriting of Children*, $0.05 a copy).

Freeman's Handwriting Scale.—This scale consists of five series of writing samples. The samples of each series have been arranged in the order of increasing merit. The five characteristics of handwriting which are considered are (1) uniformity of slant, (2) uniformity of alignment, (3) quality of line, (4) letter-formation, (5) spacing. This scale may be used in determining the general quality of a pupil's handwriting. In addition, it was designed particularly as an aid in diagnosing faults in handwriting along the lines mentioned above. Address Houghton Mifflin Co., Chicago, Illinois (scale, $0.25 a copy); *The Teaching of Handwriting*, by F. N. Freeman (price, $0.60 a copy). Read "An Analytic Scale for Handwriting," by F. N. Freeman, *Elementary School Journal*, January, 1915.

Score Card for the Measurement of Handwriting, by C. T. Gray.—This score card consists of a list of nine characteristics of writing which deserve consideration in the analysis of samples of handwriting. The relative importance of the nine points has been expressed in terms of weights or scores. This score card may be used in evaluating samples of handwriting. Address C. T. Gray, University of Texas, Austin, Texas, and secure *Bulletin No. 37*, 1915, entitled "A Score Card for the Measurement of Handwriting" (price, $0.20 a copy).

Thorndike's Handwriting Scale.—This scale consists of a series of writing samples, arranged in order, from the standpoint of "general merit." It may be used in measuring the quality of the handwriting of pupils in the elementary school. Address Bureau of Publications, Teachers College, Columbia University, New

York City (handwriting scale, $0.08 a copy; handwriting scale with samples for practice and record sheet, $0.20 each). Read "Handwriting," by E. L. Thorndike, *Teachers College Record*, March, 1910.

SPELLING

Ayres's Spelling Scale.—This scale consists of 1,000 of the most frequently used words. The relative difficulty of the words has been carefully determined. This scale may be used in testing a pupil's ability to spell the words which occur most frequently in writing. Address Russell Sage Foundation, New York City (scale, $0.05 a copy). Read *A Measuring Scale for Ability in Spelling*, by Leonard P. Ayres. Russell Sage Foundation, New York City.

Buckingham's Spelling Ability: Its Measurement and Distribution.—This monograph presents a list of 50 words, the relative difficulty of which has been carefully determined. These words may be used in measuring the achievement of elementary-school pupils in spelling. Address Bureau of Publications, Teachers College, Columbia University, New York City (cloth bound, per copy, $1.15; paper bound, $0.95).

Standard Research Tests, Spelling-Writing, by S. A. Courtis.—This test consists of a series of writing exercises of 10 sentences each. The number of seconds which are allowed for writing each sentence is indicated. The test is designed to measure the ability of pupils to spell when they are writing words in context at a standard speed. Address S. A. Courtis, 82 Eliot Street, Detroit, Michigan (tests, instructions, and record sheets for a class of forty children in any grade from the second to the eighth, $0.15).

Jones's Concrete Investigation of the Material of English Spelling.—This bulletin presents the results of an investigation to determine "What words, grade for grade, do children use in their own free written speech, and what words, therefore, do they need to know how to spell?" Address University of South Dakota, Vermilion, South Dakota (bulletins, $0.10 each; $1.00 per dozen).

Starch's Spelling Tests.—These tests are composed of 6 spelling-lists, each of which contains 100 words. These words were selected from a list which was composed of the first defined word on every

even-numbered page in Webster's *New International Dictionary*. The tests may be used in all grades to measure general spelling ability. Read *Educational Measurements*, by Daniel Starch, chap. vi (The MacMillan Company).

COMPOSITION AND GRAMMAR

Harvard-Newton Composition Scale.—This scale consists of a series of six compositions for each of the four types of English compositions. The compositions of each series are arranged in the order of merit, with strong and weak points listed. This scale was designed as an aid in measuring the merits and defects of compositions written by eighth-grade pupils, and may be used effectively in scoring high-school compositions. Address Frank W. Ballou, Department of Educational Investigations and Measurements, Boston, Massachusetts. Read *Harvard-Newton Bulletin No. 2*, September, 1914. Address Bureau of Educational Measurements and Standards, Kansas State Normal School, Emporia, Kansas, and secure scale with directions for use and class record sheet (price, $0.10).

Hillegas' Composition Scale.—This scale consists of a series of compositions arranged in the order of general merit. It is used in measuring the general merit of compositions written by elementary and high-school pupils. Address Bureau of Publications, Teachers College, Columbia University, New York City (Hillegas' Composition Scale, $0.03. Hillegas-Thorndike Extension of Hillegas' Scale, $0.06). Read "Hillegas Scale for Measurement of English Compositions," *Teachers College Records*, September, 1912.

Starch's English Grammar Tests.—These tests consist of the following exercises: (*a*) Grammatical Scales A, B, and C, designed to measure a pupil's ability in the correct usage of certain common words; (*b*) Punctuation Scale A, designed to test the ability of a pupil to punctuate sentences properly; (*c*) Grammatical Test I, designed to measure a pupil's knowledge of the parts of speech. Grammatical Test II, designed to test a pupil's knowledge of case forms of nouns and pronouns. Grammatical Test III, designed to test a pupil's knowledge of tense and modes of verbs. Address Daniel Starch, University of Wisconsin, Madison, Wisconsin

(each test, $0.30 per hundred). Read *Educational Measurements*, by Daniel Starch, chap. viii (The Macmillan Company).

Thompson's Minimum Essentials in Language.—This series consists of 40 or more practice sheets and test sheets. These include exercises in correct uses, pronunciation, punctuation, parts of speech, common irregular verbs, adjectives, adverbs, pronouns, etc. Address Ginn & Co., Chicago, Illinois (100 copies, one kind, $0.25; 500 copies, one kind, $1.00 for test sheets, $0.90 for practice sheets).

Trabue's Completion Language Scales.—These scales consist of a series of sentences in which one or more words have been omitted from each. These sentences are arranged in the order of difficulty which children experience in completing them. They are designed to test a pupil's "ability to think about words and language forms." Address Bureau of Publications, Teachers College, Columbia University, New York City (Scales B, C, D, E, J, K. L, M, each $0.30 per hundred, carriage extra). Read *Completion-Test Language Scales*, by M. R. Trabue, Bureau of Publications, Teachers College, Columbia University, New York City.

GEOGRAPHY

Thompson's Minimum Essentials.—These exercises consist of subject-matter tests on North America, South America, Europe, Asia, Africa, Australia, and the world. They were designed as aids in securing economy and efficiency in teaching fundamental facts about the geography of the world. Address Ginn & Co., Chicago, Illinois (price for 100, one kind, $0.25; for 500, one kind, $1.00 for test sheets, $0.90 for practice sheets).

DRAWING

Thorndike's Drawing Scale.—This scale consists of a series of carefully graded drawings arranged in the order of increasing merit in drawing. It was designed to aid in measuring the achievement of pupils in drawing and the improvement from grade to grade. Address Bureau of Publications, Teachers College, Columbia University, New York City (scale with samples for practice, $0.03). Read "The Measurement of Achievement in Drawing," by E. L. Thorndike, *Teachers College Record*, November, 1913.

ALGEBRA

Indiana Algebra Tests, arranged by H. G. Childs.—These tests were arranged to measure a pupil's ability in certain of the more fundamental processes in elementary algebra. Address The University Book Store, Columbia City, Indiana.

Preliminary Algebra Tests, by C. E. Stromquist.—These tests were designed to measure ability in the four fundamentals in elementary algebra. Address C. E. Stromquist, University of Wyoming, Laramie, Wyoming.

Standardized Tests in First-Year Algebra, by H. O. Rugg.—These tests were designed to measure, first, ability in each of the essential formal processes in first-year algebra, and, secondly, algebraic reasoning ability as shown by efficiency in translation tests. Address H. O. Rugg, School of Education, University of Chicago, Chicago, Illinois. Read "The Experimental Determination of Standards in First-Year Algebra," *School Review*, January 1916.

Standard Research Tests in Algebra, by Walter S. Monroe.—These tests were designed to measure ability in certain of the more important processes in elementary algebra. Address Walter S. Monroe, Bureau of Educational Measurements and Standards, Emporia State Normal School, Emporia, Kansas (price, $1.25 per hundred). Read "A Test of the Attainment of First-Year High-School Students in Algebra," by Walter S. Monroe, *School Review*, March, 1915.

FREEHAND LETTERING

A Scale for Measuring Freehand Lettering for Use in the Secondary Schools and Colleges, by H. O. Rugg.—This scale consists of a series of 8 samples of freehand lettering, arranged in the order of increasing merit. It may be used in measuring the efficiency of a student's work in freehand lettering. Address H. O. Rugg, School of Education, University of Chicago, Chicago, Illinois (price, $0.25 a copy). Read "A Scale for Measuring Freehand Lettering," by H. O. Rugg, *Journal of Educational Psychology*, January, 1915.

FOREIGN LANGUAGES

French Vocabulary and Reading Tests, by Daniel Starch.—The vocabulary test consists of two lists of 100 words each, and was designed to measure the size of a pupil's vocabulary. The reading test consists of a list of 30 sentences arranged roughly in the order of increasing difficulty, and was designed to measure a pupil's ability to read and translate French sentences. Address Daniel Starch, University of Wisconsin, Madison, Wisconsin. Read *Educational Measurements*, by Daniel Starch, chap. xiii (The Macmillan Company).

German and Latin Vocabulary and Reading Tests.—These tests are similar to the French tests described in the preceding paragraph. They have been designed by Daniel Starch, and are described in *Educational Measurements*. Address Daniel Starch, University of Wisconsin, Madison, Wisconsin.

PHYSICS

Test for Physics.—This test consists of 75 mutilated sentences which relate to 102 important facts and principles found in each of five physics texts. This test is designed to measure a pupil's knowledge of these important facts. Address Daniel Starch, University of Wisconsin, Madison, Wisconsin. Read *Educational Measurements*, by Daniel Starch, chap. xiv.

COURSE OF STUDY IN DRAWING IN THE ELEMENTARY SCHOOL, SCHOOL OF EDUCATION, THE UNIVERSITY OF CHICAGO. IV

By Members of the Department of Art Education in the College of Education and the Elementary School

WALTER SARGENT
ELIZABETH E. MILLER, Elementary School
MARGARET GORDON, Kindergarten

GRADE VI

Methods and Subject-Matter

I. Continued illustration of given themes:

1. Collection of material.
2. Special study and record of data for particular items called for by the subject in hand.

The theme drawing is guided by specific questions calculated to concentrate attention in such a way as to lead the children to the new experience or observation demanded by the theme. Thus it develops ability to explore material systematically, under guidance of specific questions, and to produce records which shall answer these questions. The most important themes selected for illustration here are pioneer life and early Colonial life, from the history; the tropical region of Africa, from the geography; and stories and poems from the literature, as "Rip Van Winkle," and parts of the *Iliad*.

One successful method of presenting these themes for illustration is as follows:

Each child chooses the part of the story he wishes to represent. He then writes this subject down on a piece of paper and makes a list beneath it of every object he will need to draw for his composition. In the case of tropical Africa, an average list reads somewhat in this way:

Natives Hunting Elephants
- Forest
- Jungle
- Elephants
- Natives
- Sky
- Land

Some of these lists are read aloud and the class gives suggestions. After this each child makes a quick sketch which will show the general plan of his picture. Then a page of detailed and careful drawings is required, which will show that the child knows how to draw definitely each object on his list. It is at this stage that the children have the opportunity to gather their own material for data. They take their sketchbooks to the museum or library and look up pictures of the animals, people, or objects that they need. From many different sources they at last gather material to help them in making their detailed drawing of each object on the list. When this page of careful sketches has been completed, the child is ready to make his final picture. There is class criticism of the quick plans for the compositions, and discussion of some of the important underlying principles. Comparisons are made with good pictures, and such points noted as: ways of emphasizing the center of interest, dominant and subordinate masses, beauty of line, values, color, etc. The final arrangement of objects in the compositions is criticized by the class before the color is put on, and corrections are made as far as is possible. Water colors are used for the finished picture.

II. Detailed study of a few selected objects to be added to the graphic vocabulary and an elaboration of those objects already learned:

1. Continued study of animal forms. Some knowledge of general, anatomical structure of a bird and an animal, e.g., from sketch of general framework of skeleton and from form of the framework in wire, and from modeling the muscular form upon this (from anatomical diagrams, or other sources). Different interpretations, e.g., quick sketches with pencil and brush from the object and from memory. Japanese drawings are studied to secure better technique.

2. Plant drawing with different interpretations, for example:
   a) Drawing of character and growth with a few brush strokes to show individuality of given plants. Compare with shadows and with blueprints.
   b) Careful drawing of certain characteristics of detail, e.g., shapes of petals, leaf margin, structure, joints, etc., from nature and from blueprints.
   c) Further study of effects of foreshortening.
   d) Exact matching of color.
   e) Drawing in careful outline and coloring with flat tones of water color or colored pencils.
3. Drawing of simple constructed objects to show general structure, for example, rectangular solids with consistent sequence of lines. The three key lines are selected from objects such as books, boxes, houses, and the other lines of the form are experimented with until they follow in the right sequence, or until the object "looks right." In connection with the illustrations for early pioneer life, the children need to draw a log cabin. They begin this by drawing the angles made by the key lines. This will determine how far below or above the eye the object is. The house is built upon this angle, and filled out as though it were a rectangular box. Details may be added later. Drawing of tools and objects used in games, e.g., tennis racquet, croquet mallet, skates, plane saw, showing structure of object and effect of foreshortening. Ellipses are drawn in connection with representing cooking utensils in different positions.
4. Correct judgment of proportions and spatial relations:
   a) In objects and groups of two or more objects.
   b) In maps, plans, and diagrams.
   c) In geometric figures, e.g., circles, squares, and oblongs of given proportions.
5. Representation of landscape in connection with the study of the tropical region of Africa, South America, and Australia. This involves a review of the desert types of landscape learned in the primary grades, and also of most of the animal forms used previously. A few new types are added,

and the old ones are drawn with greater detail and better technique.

6. The human figure is drawn as indicated for Grade V. More attention is given to the shapes of hands, arms, feet, and legs. Figures are used in nearly all of the illustrative work, especially in the drawings of pioneer life, and of scenes for the literature.

III. The design work in this grade, as in the others, underlies as nearly as is possible all of the art work. Where books are made, the covers must be decorated, title-pages, illustrations for the written paragraphs, initial letters, head-pieces, tail-pieces, etc., must be made. The written work itself becomes a problem in design, and is so arranged upon the page that pleasing margins are left on all sides. Through all of this work the children can now begin to formulate for themselves some of the more fundamental principles of design.

Much of the design grows out of problems to be met in the household art period. Decorative units and borders are made for cross-stitch and other sewing problems.

The *School Reporter* (the Elementary School magazine, edited once each quarter by the children) calls for designs for the cover, tail-pieces, illustrations, etc. This work must be done in India ink, and this affords a new way of treating the drawings.

IV. Special emphasis is placed here upon the use of water colors as a medium for representing landscape and also in design. The problems of values and hues are discussed and much experimenting is done. A set of sheets is made by each child which will show the amount of color theory and the technique he has acquired.

Standards of Attainment

I. Training in gathering data from pictures, etc., by means of collections of notes and sketches for illustrating a given theme.

II. Ability:

1. To draw from memory, with more expression, animal and bird forms, adding more knowledge by nature-study, sketches for data, collections of pictures, modeling, etc.

2. To represent plant forms and trees with more expression of individual character and structure:
   a) With rapid brush strokes in ink and color.
   b) With careful pencil drawing.
   c) With flat tones of color over pencil drawing.
3. To sketch objects and diagrams in good general proportions; to draw groups of two or three objects in good relative proportions and in different positions; to draw constructed objects, rectilinear and curvilinear with some feeling for structure and for sequence of lines, and representation of different positions.
4. To draw on board or paper geometric relations as suggested in Grade V.
5. To represent, in addition to types of landscape already learned, the most common forms of tropical landscape, e.g., jungle regions, deserts.
6. To draw the human figure in action with good general proportions, and with more careful representation of shapes of hands, feet, legs, arms, etc.

III. Ability:

1. To make decorative interpretations of animal and plant forms, with more appreciation of the beauty of line.
2. To formulate some of the fundamental principles underlying all good design.
3. To print, using the double-lined letters, as found in a good Roman alphabet; also to print with the lower-case letters.
4. To make symbols and monograms of letters.
5. To make borders of geometric units, decorative units from geometric shapes, cutting corners and sides.

IV. Ability to use water colors and crayons in all illustrative work and design.

Ability to make runs of hues between any two colors with water colors.

Ability to make five values of a color, and to place any color as to its hue and value.

Color in design: ability to combine light and dark with a pleasing result.

GRADE VII

Methods and Subject-Matter

I. Continued illustration of given themes; knowledge of how to go to work to collect material for a given theme; and readiness to assume responsibility for gathering the necessary data, by pictures, sketches, etc.

The themes chosen for illustration here may come from the literature, history, or geography. The unit of lifesaving, in connection with the literature, furnishes good material. The children have a chance to study the shapes of life-boats, lighthouses, coastlines, and the costuming of the life-savers. The subject of bridges calls for much illustration, and offers a chance for work with constructed objects. The geography requires illustrations which will picture the different kinds of landscape in the United States, and also the industries of each section. This involves all the types of geographical landscape used in the lower grades. The problem here is to draw readily from memory with more elaborateness and detail, and with more thought of decorative treatment in all the illustrative work. Some of the topics illustrated are *Julius Caesar*, *The Vision of Sir Launfal*, patriotism, and the King Arthur stories.

II. Special study of illustrations to discover ways of representing more skilfully such particular objects as plant and animal forms, the human figure, etc.

The work of this grade is a summary of all the work in the previous years. Objects in the graphic vocabulary are reviewed as often as possible. The human figure is drawn in greater detail, as in Grade VI; illustrations of the knights of King Arthur give a good opportunity for this.

The building up of a concept of rectilinear and curvilinear solidity is continued from Grade VI. The sequence of lines is emphasized, through work with the key lines of a rectilinear solid; the effect of modifying the angle formed by the key lines; how to build up, add to, or modify rectangular shapes in terms of drawing. The drawing of objects extending above and below the eye is worked out by giving such a problem as the following: Imagine a box above

the eye and a similar one directly below, at the same distance; sketch boxes to fill the intervening space.

The method of building up the concept of curvilinear solidity is after somewhat the same manner as the foregoing. There is much practice in drawing ellipses or "flattened circles." Then the effect of modifying the width of the ellipse in cylindrical and hemispherical forms is noted. These forms are built up, added to, and modified, and objects are drawn which extend both below and above the eye, e.g., cylindrical towers, etc.

The point stressed in this work with constructed objects is that it should be drawn so that it "looks right." Nothing is said about vanishing-points, and none of the theory of perspective is given. The child experiments with the sequence of lines until the object looks right to him.

There is continued drawing of geometrical and spacial relations previously studied. It is here that the children should receive a knowledge of angles in terms of degrees, e.g., 15°, 30°, 45°, 75°, etc.

III. The study of good pictures comes through the associating literature and effects in nature with works of art. The children look for pictures which seem to them to illustrate certain literature or effects in nature. While they are actually having the experience of producing a composition or some special effect, they are able to have a very real sympathy and appreciation for the masterpiece in which the artist has succeeded in securing what they are working for.

IV. The design in Grade VII is a summing up of all the previous work along that line. The principles can be formulated to some extent, and applied in all the work, as in household art, woodwork, clay, etc.

The children continue the experimentation with conventions and symbols for aesthetic expression, e.g., decorative representation of well-known animals or plants, making these with free brush strokes until some decorative style is developed. Collections are made, from magazines, etc., of good examples of decorative animals, e.g., heraldic forms.

In connection with the study of beauty of line there is the drawing of spirals, and of harmoniously related lines, as in the

anthemion. These are drawn on the board, and on paper with pencil and with brush. The children are encouraged to collect examples of beautiful line combinations. This work should influence all of the compositions made as illustrations for themes as well as the formal designs to be used as decorative units, tail-pieces, titles, etc.

V. Some of the underlying principles of color theory are worked out here. All of the previous work with color is reviewed, and a series of color sheets is made which illustrates these principles. This knowledge is applied to all work in which color is used.

Standards of Attainment

I. Ability to illustrate any given theme: to gather, independently, the necessary data, and to produce a result artistically good, and also true from the standpoint of the subject-matter illustrated.

II. The representation, from memory, of all the forms learned in the graphic vocabulary throughout the school; and to represent from the object any form, with good proportions and accuracy of detail. Ability:

1. To draw readily from memory any of the animal and bird forms used in the previous years, to represent these with detail, and to give different interpretations through the use of different mediums.
2. To represent plant and tree forms with more expression of individual character and structure.
3. To draw groups of constructed objects—rectilinear and curvilinear solids—with feeling for structure and sequence of lines, and to represent these in any position.
4. To draw, with a fair degree of accuracy, on board or on paper, geometric relations—such as angles, oblongs, squares, etc.—of given proportions.
5. To represent the human figure with more detail and accuracy than in Grade VI, through study of the shapes of hands and feet and a general knowledge of the structure of muscles and bones.

6. To represent truthfully and with pleasing artistic effect any type of landscape, from memory; and to sketch from observation portions of landscape in the immediate environment.

III. Appreciation of good pictures through the study of a few selected masterpieces.

IV. Ability to appreciate and apply the fundamental principles of design:

1. Ability to make decorative interpretations of any of the forms in the graphic vocabulary, e.g., animal, plant, and to treat any type of landscape as a decorative composition.
2. Some appreciation of beauty of curved lines with an attempt to carry it over into all original designs.
3. Ability to space well and print short quotations, and to illuminate these simply; to use decorative type of letters, e.g., the Roman Gothic; to treat letters decoratively in the use of ciphers, monograms, and initial letters.

V. Ability to appreciate color through the knowledge of some of the simple principles of color theory, and to apply this knowledge in the use of color.

1. Recognition of different intensities in color.
2. Ability to work out simple harmonies.
3. Ability to place any color approximately, by naming it in terms of its hue, value, and intensity.
4. Color in design: ability to make pleasing combinations of color opposites.

A STUDY OF THE COMMON MISTAKES IN PUPILS' ORAL ENGLISH

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For years formal grammar has been an important subject in the curriculum of most schools. In the belief that conditions at present are such as to entitle it to a less important place than it now occupies, an investigation was undertaken to determine the errors of speech made by the Cincinnati school children, how frequently those errors were made, to what extent formal grammar might be made of assistance in overcoming them, and to what extent the formal grammar now studied provides for errors not made by Cincinnati children.

The teachers from the third through the eighth grades were asked by the Superintendent of Schools to record all the errors noticed in the oral language of their pupils from November 15 to 19, 1915, inclusive, and to note the number of times each error was made. The records were collected and turned over to those in charge of the investigation, to be systematized and worked over into a report on conditions existing among Cincinnati school children.

A preliminary examination of all the reports showed that children in the same district but in different schools made exactly the same errors in practically the same proportion. To tabulate the errors made by all the children would have been a stupendous task. To bring the work within bounds, certain schools, considered representative of conditions in the various parts of the city, were selected, and their reports tabulated. The tables and conclusions offered are based on the reports from the schools so selected. Reports from a total of 1,387 children were used. Those in charge of the investigation feel that the figures offered are reliable only for the more glaring errors such as "I seen," "them books," etc.

Wherever the teacher herself was not sensitive to the finer distinctions, such as "May I" for "Can I," "I shall" for "I will," such errors were not reported. Naturally, the figures in this report include only such material as was collected.

Table I gives the names of the schools reports from which were used in the investigation, and also the number of pupils observed in each grade.

TABLE I

NUMBER OF PUPILS OBSERVED FOR ERRORS IN ORAL ENGLISH, NOVEMBER 15 TO 19, 1915

Schools	Grades					
	3	4	5	6	7	8
Webster	40	31	50	43	.....	.....
McKinley	.....	.....	.....	.....	45	46
Garfield	44	36	38	.....	32	.....
Washington	.....	.....	.....	.....	.....	68
Vine St.	.....	.....	.....	28	.....	.....
28th Dist.	.....	38	.....	.....	.....	.....
Columbian	38	.....	.....	35	33	53
30th Dist.	.....	40	54	.....	.....	.....
N. Fairmount	.....	.....	.....	37	.....	.....
Chase	.....	.....	.....	.....	51	.....
Hyde Park	.....	33	44	48	.....	.....
Clifton	44	.....	.....	.....	.....	.....
Mt. Washington	13	.....	.....	.....	29	17
Pleasant Ridge	50	48	.....	35	44	.....
Linwood	.....	.....	45	.....	.....	39
Anderson's Ferry Colony	.....	5	.....	4	.....	.....
Total number of pupils for each grade	229	231	231	230	234	223

Table II gives a classification of all the errors made, the specific error in each classification, the number of times that error was noted in each grade, and the total number of times it occurred among the 1,378 children observed.

Thus, in the case of wrong verbs, "ain't," instead of "hasn't" or "haven't" was used 34 times by third-grade children, and 124 times by children of the upper grades.

TABLE II

ORAL ERRORS

Showing number of times each Error was made—Arranged according to parts of speech

VERBS	GRADES						
	3	4	5	6	7	8	Total
Wrong verb:							
learn, for teach	47	17	3	1	.....	3	71
can, for may	42	.....	2	15	3	.....	60
got, for receive, have, become, grow, is	9	27	4	.....	6	7	53
leave, for let	2	9	10	12	.....	1	34
lay, for lie	.....	11	5	.....	3	2	21
make (dinner), for prepare, get	10	10	.....	.....	.....	1	21
set, for sit	.....	4	3	.....	.....	3	10
lend, for borrow	.....	5	.....	.....	.....	1	6
laid, for lay	.....	1	.....	.....	.....	1	2
Impossible tense form:							
ain't, for am not, isn't, aren't	34	17	15	20	14	24	124
ain't, for hasn't, haven't	31	19	5	23	1	10	89
drawed, throwed, growed, knowed, etc.	14	7	3	.....	3	.....	27
et, for ate	9	2	.....	.....	.....	.....	11
boughten, tooken	3	3	.....	2	.....	.....	8
sawn, for saw	6	.....	.....	.....	.....	.....	6
busted,	.....	.....	1	2	.....	2	5
snuck, clumb	1	3	1	.....	.....	.....	5
brung	.....	3	.....	.....	.....	.....	3
durst	3	.....	.....	.....	.....	.....	3
attackted	.....	.....	.....	.....	3	.....	3
suspicion, for suspect	.....	.....	.....	1	.....	.....	1
Perfect participle for past tense and reverse:							
seen, had saw	67	45	18	22	13	15	180
done	21	20	14	15	26	17	113
went	19	4	.....	2	3	4	32
broke	16	.....	3	.....	3	.....	22
begun, rung	.....	1	.....	3	1	4	9
took	.....	.....	5	.....	.....	2	7
wrote	.....	.....	1	1	1	.....	3
have came, have became	.....	.....	1	.....	1	.....	2
Wrong tense—present for past:							
come	.....	16	5	7	.....	3	31
says	.....	.....	6	14	.....	.....	20
run	.....	10	.....	.....	1	.....	11
give	.....	1	1	.....	.....	.....	2
Use of verb for noun:							
That doesn't hurt, for make any difference	8	.....	.....	.....	.....	.....	8
Wrong sequence:							
I have stayed at home and had done my work	.....	.....	.....	.....	.....	2	2
would run, for ran	.....	.....	.....	.....	.....	1	1
doing dishes and help cook	.....	.....	.....	.....	.....	1	1

TABLE II (*Continued*)

Verbs	Grades						
	3	4	5	6	7	8	Total
Incorrect use of mood:							
if it was not for you, for were not	.....	5	.....	.....	.....	.....	5
Failure of verb to agree with subject in number:							
is	30	25	2	9	2	8	76
don't	.....	6	5	6	19	.....	36
Pronouns							
First personal pronoun standing first in series:							
I and my brother	50	42	1	3	.....	.....	96
Accusative pronoun for subject:							
Frank and me	54	6	4	3	1	2	80
Pronoun for demonstrative Adjective:							
them, for these	18	9	8	6	13	21	75
Predicate nominative not in nominative case:							
It was me	.....	1	1	3	14	17	36
Wrong pronoun:							
that, which, for who, whose	12	.....	.....	.....	1	1	14
Object of verb or preposition not in objective case:							
I know who he saw, with George and I	.....	2	1	3	.....	1	7
Failure of pronoun to agree with antecedent in number:							
Each of them took their guns	.....	.....	.....	3	.....	1	4
Pronoun for adverb:							
They are two pens lying, etc	.....	.....	.....	.....	1	.....	1
Wrong form of pronoun:							
hisself, his'n	.....	1	.....	1	.....	.....	2
Adjectives and Adverbs							
Confusion of adjective and adverb:							
That there	4	.....	3	11	19	1	38
quick, etc., for quickly	1	.....	.....	1	.....	3	5
awful, for very	.....	.....	.....	1	1	2	4
good, for well	.....	.....	.....	.....	.....	1	1
Wrong article:							
a for an	.....	2	.....	.....	.....	.....	2
Misuse of adjective:							
funny, lots, etc., for queer, many	8	.....	.....	3	.....	.....	11
Double comparison:							
more stronger, worser, for stronger, worse	1	.....	.....	1	.....	.....	2
Wrong comparison:							
gooder	1	.....	.....	.....	.....	.....	1
Superlative for comparative:							
largest	3	.....	2	2	.....	1	8
Misuse of adverb:							
awfully, for very, dreadfully	.....	.....	.....	.....	.....	3	3

TABLE II (*Continued*)

PREPOSITIONS	GRADES						
	3	4	5	6	7	8	Total
Confusion of preposition and conjunction:							
He does it like she does	.....	.....	.....	5	10	.....	15
Wrong preposition:							
by my aunt's	10	13	1	3	.....	1	28
by us, for near us	16	.....	.....	.....	.....	.....	16
in back of	3	.....	3	4	.....	2	12
would of, had a, for would have had to	1	3	.....	1	.....	2	7
get some paper off her	.....	.....	.....	4	.....	.....	4
stays to home, different to	.....	.....	.....	.....	.....	2	2
find fault of	.....	1	.....	.....	.....	.....	1
upon Monday	.....	.....	.....	.....	.....	1	1
NEGATIVES							
Haven't no, for haven't any	91	31	38	12	29	32	233
Never gave	6	.....	7	9	8	.....	30
AMBIGUOUS EXPRESSIONS							
A hand and an arm with a sword in it	.....	1	.....	.....	.....	.....	1
SYNTACTICAL REDUNDANCE							
got (in ain't got, haven't got)	36	21	1	26	11	17	112
my mother she	13	7	24	4	7	3	58
all two, all both	19	.....	.....	.....	.....	.....	19
and, so, at beginning of sentence	.....	.....	.....	.....	.....	.....	.....
why, in middle of sentence	.....	.....	.....	.....	15	.....	15
for to keep, Where are you at?	.....	1	.....	3	1	2	7
he says, says he	.....	.....	.....	.....	3	.....	3
those there	.....	.....	.....	.....	3	.....	3
yet (I have seen her twice yet)	.....	.....	.....	2	.....	.....	2
they went and took	.....	.....	1	.....	.....	.....	1
MISPRONUNCIATIONS							
git, jist, kin, ketch, etc.	67	7	5	10	.....	2	91
somepin, for something	25	.....	.....	.....	.....	.....	25
readin', nothin', etc.	18	.....	.....	.....	.....	.....	18
onct	.....	12	.....	.....	.....	.....	12
liberry, pitcher, for picture	.....	7	.....	1	.....	.....	8
youse	.....	7	.....	1	.....	.....	8
scart, for scared	5	.....	.....	1	.....	.....	6
wen, wich	6	.....	.....	.....	.....	.....	6
viadock, for viaduct	3	.....	.....	.....	.....	.....	3
hunderd, childern, for hundred, children	3	.....	.....	.....	.....	.....	3
futher, for further	.....	1	.....	1	.....	.....	2
haf, for have	.....	.....	.....	.....	.....	1	1
perty	.....	.....	.....	.....	.....	1	1

In Table III, all the errors made 10 times or more are arranged in the order of frequency. For instance, among all the children

TABLE III

MOST COMMON ERRORS IN ORAL ENGLISH IN ORDER OF FREQUENCY
(None listed below ten)

haven't no, for haven't any	233
seen, had saw	180
ain't, for am not, isn't, aren't	124
done	113
got, ain't got, haven't got	112
I and my brother	96
kin, jist, git, ketch, etc.	91
ain't, for haven't, hasn't	89
Frank and me, for Frank and I	80
is, for are	76
them, for those	75
learn, for teach	71
can, for may	60
my mother she	58
got, for receive, become, grow, is	53
that there	38
don't, for doesn't	36
It was me	36
leave, for let	34
went, for gone	32
come, for came	31
never gave	30
by my aunt's	28
drawed, throwed, growed, knowed, etc.	27
somepin, for something	25
broke, for broken	22
lay, for lie	21
make dinner, for prepare, get	21
says, for said	20
all two, all both	19
readin', nothin', etc.	18
by us, for near us	16
he does it like she does	15
why, and, so, at the beginning of sentence or in middle of sentence	15
that, which, for who and whose	14
onct	12
in back of	12
funny, lots, etc., for queer, many	11
et, for ate	11
run, for ran	11
set, for sit	10

observed, "haven't no" was the error most frequently made, being noted 233 times. An error made less than 10 times among 1,378

children should hardly be considered chronic, nor would it be just to the large majority not making the error to be forced to learn a rule providing for its correction.

TABLE IV

PERCENTAGES OF ERRORS IN EACH GRADE DUE TO EACH OF THE EIGHT CLASSES OF MISTAKES

CLASSIFICATION OF ERRORS	GRADES						
	3	4	5	6	7	8	Total
1. Verbs	44.2	60.0	55.4	54.9	43.3	48.2	49.9
2. Pronouns	15.9	14.0	6.7	7.7	12.3	18.8	13.5
3. Negatives	11.5	7.1	20.2	7.3	15.2	14.0	11.6
4. Syntactical redundance	8.0	6.6	11.2	12.6	16.5	9.6	9.7
5. Mispronunciations	14.7	7.8	2.2	4.9	.....	1.7	8.0
6. Prepositions	3.4	3.2	1.8	5.6	4.1	2.6	3.5
7. Adjectives and adverbs	2.0	0.6	2.2	6.6	8.2	4.8	3.3
8. Ambiguous expressions	.....	.2	.....	.....	.....	.....	.2

Of the total numbers of errors in the third-grade verbs cause 44.2 per cent, etc. In all the grades verbs cause 50 per cent of the errors.

Table IV is compiled from Table II. All the errors reported fall into eight classifications. Of all the errors made by third-grade children, 44.2 per cent were made in the use of verbs. Of all the errors made by all the children, 49.9 per cent, or one-half, were in the use of verbs, the other 50 per cent being scattered over the seven other classifications.

Table IV not only shows that the vast majority of mistakes is in the use of verbs, but that all six grades share fairly equally in the error. The same thing is true, but to a less degree, in the use of pronouns, negatives, syntactical redundance, prepositions, and adjectives and adverbs. In mispronunciations, evidently the school work is accomplishing results, for 14.7 per cent of words mispronounced in the third grade falls to 1.7 per cent in the eighth. There is a blank in the seventh-grade column. It is certain that mispronunciations occur in the seventh grade, but it is equally certain that they are neither of the glaring type nor of the frequency of the third grade; otherwise they would have been forced upon the attention of the seventh-grade teachers.

Table IV raises the question, Is the only effective work in all our grammar and language teaching being done with mispronounced words? The figures noted for pronouns, etc., suggest a still more discouraging question. More mistakes are made in pronouns in the eighth grade than in any other. Is the present teaching of pronouns leading to a more confused state of mind in the eighth-grade child than existed when he was in the third grade and was entirely unconscious of the rules of grammar governing the use of such words?

Table V gives the violations of grammatical forms of which Cincinnati children are guilty.

TABLE V

VIOLATIONS OF GRAMMATICAL FORMS—IN ORDER OF DECREASING FREQUENCY

VERBS

1. Impossible tense forms, as "ain't, drawed, busted."
2. Use of perfect participle for past tense, and reverse, as "I seen," "I had saw."
3. Use of wrong verb, as "learn" for "teach," "can" for "may."
4. Failure of verb to agree with the subject in number and person, as "There is four," "he don't."
5. Confusion of present and past tenses, as "She come." "He run."
6. Use of verb for noun, as "It doesn't hurt."
7. Incorrect use of mood, as "If it was not for you."
8. Wrong sequence of tenses, as "I have stayed home and had done my work."

PRONOUNS

1. First personal pronoun standing first in a series, as "I and my brother."
2. Accusative pronoun for subject, as "Frank and me went."
3. Use of personal pronoun for demonstrative adjective, as "them things."
4. Predicate nominative not in the nominative case, as "It was me."
5. Use of wrong relative pronoun, "the girl which went."
6. Object of verb or preposition not in the accusative case, as "I know who he saw," "with George and I."
7. Failure of pronoun to agree with its antecedent in number, as "Each of them took their guns."
8. Wrong form of pronoun, as "hisself."
9. Use of pronoun for adverb, as "They are two pens lying there."

NEGATIVES

1. Use of double negative, as "haven't no."
2. Use of negative for auxiliary verb, as "He never gave."

SYNTACTICAL REDUNDANCE

1. In verbs, as "haven't got."
2. In prepositions, as "Where are you at?" "for to keep."
3. In pronouns, as "my mother she said."
4. Miscellaneous, as "they went and took," "all both."

MISPRONUNCIATION

1. ing words, as "nothin'."
2. Words ending in ed, as "scart."
3. Changing of vowels, as "git" for "get"; "kin" for "can."
4. Miscellaneous as "perty," "youse," "liberry."

PREPOSITIONS

1. Wrong preposition, as "I am going by my aunt's."
2. Confusion of preposition and conjunction, as "He does it like she does."

ADJECTIVES AND ADVERBS

1. Confusion of adjective and adverb, "that there book," "He went quick."
2. Misuse of adjective, as "funny" for "queer."
3. Superlative degree for comparative, as "This is the largest of the two."
4. Misuse of adverb, as "awfully" for "very."
5. Double comparison, as "more stronger, worser."
6. Wrong comparison, as "gooder."
7. Wrong article, as "a" for "an."

AMBIGUOUS EXPRESSION

1. Ambiguous expression, as "a hand and an arm with a sword in it."

An examination of this table shows that almost all these violations are common errors not explained away by grammatical rules. Take the impossible tense form "ain't," for instance. Long before the child has any comprehension of the meaning of grammatical terms, he can be made to understand that there is no such word as "ain't," and can be taught to know the correct form, even if he cannot be taught to use it outside the school room. Of the pronouns, take "I and my brother," for instance. If the grammatical rule that the first personal pronoun must stand last is to help him,

he must wait, to correct the error, until he can understand the terms "first personal pronoun." How much simpler to explain to a third-grade child that politeness requires that he place himself last! Of the double negatives, an analysis of "haven't no" "have not no" will show him the impossibility of the double negative. His ear will generally tell him that "not no" do not go together. Of the syntactical redundance error, take "Where are you at?" The child does not need to know that the preposition "at" requires an object and that the adverb "where" cannot be that object, in order to see that "Where are you?" expresses his idea just as fully and much more tastefully. No grammar pretends to prescribe for mispronunciations. Of the misused prepositions no grammar rule can take the place of ear training in correcting the error "by my aunt's" for "to" or "near my aunt's." Of the misused adjectives and adverbs the grammar is no help in substituting queer for funny, but for such expressions as "he went quick," "worser," "a" for "an," the grammatical rules furnish very definite assistance. Such ambiguous expressions as "a hand and an arm with a sword in it" can hardly be explained away without some technical knowledge of modifiers and their position in a sentence.

Reference to Table IV will show that those grammatical errors dependent on a knowledge of grammar for correction form only a small percentage of the errors made. If, in the total allowance of time for grammar, the percentage of errors made is any guide to the time which should be spent in overcoming these errors, the study of formal grammar would occupy a small part of the total.

TABLE VI

ERRORS SELDOM MADE

1. Incorrect use of mood.
2. Wrong case form of pronoun, as "theirselves."
3. Failure of pronoun to agree with its antecedent in number, as "Everybody should do their work."
4. Use of wrong article.
5. Wrong sequence of tenses.
6. Incorrect comparison of adjectives.
7. Use of "laid" for "lay," "give" for "gave."
8. Misplaced modifier.

ERRORS NOT NOTICED OR REPORTED

1. Use of ought with had.
2. Adjective not agreeing in number with the noun it limits as "these kind," "those sort."
3. Use of "and" with the infinitive as "try and go."
4. Wrong inflection of nouns in number.
5. Use of "or" for "nor" as the correlative of neither.
6. "Slang" expressions.

Most of these errors not at all or seldom noticed are provided for by rules in grammar prescribed by the course of study. It would be wrong to assume that because these errors were not noticed they were not made, and that the teaching of the rules governing them is a waste of time and should be eliminated. Many of these errors are made too frequently to be overlooked. It seems that the time to teach the term or principle or correction of error is when it is made.

Unless the purpose of teaching formal grammar is to prepare for the study of a foreign language, we fail to see how the following list of subjects can be of any use to a child in the grades: (1) formal parsing; (2) classification of adverbs and adjectives; (3) the moods; (4) conjugation.

These omissions are suggested that it may be possible to place the stress where it properly belongs, viz., upon correct oral and written speech.

The time devoted to language work should not be decreased, but the character of the work should be changed to meet the real needs of the pupil.

TESTS IN SILENT READING IN THE RURAL SCHOOLS OF SANTA CLARA COUNTY, CALIFORNIA

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The main purpose of silent reading is, of course, to get the thought from the printed page. This ability forms the basis of all profitable study of books. To test this ability is one of the leading educational problems of the day. In the past, we have relied largely upon opinions, and, needless to say, these have been of small scientific value. It is true also that a large part of the reading itself has no scientific basis, and consequently the results therefrom have been meager. This may be partly accounted for by a lack of adequate means of measuring the efficiency of instruction in determining what results were being secured in the schools. It is the purpose of this study to discover how the rural schools compare with city schools where similar tests have been made, and with the standardized results.

The tests used in this study are known as the Starch Reading Tests.[1] They consist of simple prose stories, each printed on a separate sheet of paper (different grades receiving different stories). The children were asked to read silently, with as much speed and as great care as possible. They were told that they would be asked to write as much of the story as they had read, and that they would be marked upon the thought reproduced as well as upon the number of words read during a certain length of time. The tests were all given by the writer, who varied from the usual method of giving these tests. Instead of giving to each grade the test that bore the same number as the grade, and therefore giving a different test to each grade, he gave test No. 3 to the third and fourth grades, No. 5. to the fifth and sixth grades, and No. 7 to the seventh and eighth grades. This showed the advance of the pupils of the

[1] Daniel Starch, "Measurement of Efficiency in Reading," *Journal of Educational Psychology*, January, 1915.

higher grade over the pupils in the grade just below. In other words, it showed the advance of the fourth grade above the third, the sixth above the fifth, and the eighth above the seventh. To show the advance of the fifth-grade pupils above the pupils in the fourth grade, the latter were given test No. 5 also; and to show the advance of the seventh grade above the sixth grade, pupils of the latter were also given test No. 7. Thus the fourth and sixth grades were given two tests each. To illustrate, it can be shown as follows:

No. of test	3	5	7
Grades	3–4	5–6	7–8
No of test		5	7

By giving the fourth and sixth grades the extra tests above mentioned, it completed the chain and showed the progress the pupils had made from grade to grade and from year to year.

The blanks on which the stories were printed were distributed to the pupils with the blank sides up so that no one could read any of the material until all were ready. After a few moments for explanation and allowance for temporary nervousness of the children to disappear, the signals "Turn" and "Read" were given. The pupils were allowed exactly thirty seconds. Then they marked the last word read, turned the blanks immediately and wrote on the back all that they remembered having read. They were allowed as much time as they needed, but were not allowed to turn the blank over to see the test. Finally they turned the blanks again and filled out the spaces at the bottom, after which the papers were collected.

The speed of reading was determined by ascertaining the number of words read per second. This was done by having a blank on which was indicated the number of words in each line. With this blank the total number of words read was determined very quickly. Dividing by 30 gave the speed of reading per second.

The child's ability to comprehend what he read was measured by the number of ideas he was able to reproduce correctly. These ideas were arbitrarily weighted in terms of the combined judgments of university faculty men as follows:

STORY NO. 3

Value

9. Abe hurried home as fast as he could.
4. Did not wear stockings and shoes like you.
3. Or he could have run faster.
5. He wore deer skin leggings and moccasins of bearskin.
3. His mother made them for him.
4. He hurried across rough fields.
7. He was a funny looking figure hurrying along.
3. His suit was made of homespun cloth.
5. His cap was made of coonskin.
4. Tail of coonskin behind him like a funny tassel.
6. He had honest twinkling blue eyes.
4. This lad of long ago would have liked.
6. In one hand he held something very precious.
9. It was only a book, but Abe loved it very much.
6. Loved it more than gold or precious stones.

STORY NO. 5

2. Once upon a time.
7. There lived a very rich man.
4. He was also a king.
4. His name was Midas.
7. He had a little daughter.
2. Whom nobody but myself ever heard of.
2. I either never knew her name or have forgotten.
5. I choose to call her Marygold.
9. Midas was fonder of gold than anything else.
5. Valued crown chiefly for its precious metal.
7. If he loved anything better it was Marygold.
3. Or half as well.
4. Played merrily around her father's footstool.
6. The more love for daughter, the more gold.
9. He thought, foolish man, that the best thing that he could possibly do for his dear child would be to give her the immensest pile of yellow, glittering coin that had ever been scraped together since the world was made.
7. He gave all his thoughts to this one purpose.

STORY NO. 7

8. Captain John Hull was mint-master of Massachusetts.
6. He coined all the money that was made there.
4. This was a new line of business.
3. In earlier days of the colony.

5. Currency coinage consisted of gold and silver.
4. Money of England, Portugal, and Spain.
9. 4. Coins were scarce and people were forced to
   5. barter their commodities or belongings.
7. Not enough money in parts of country to pay ministers.
5. Ministers forced to take quantities of fish, bushels of corn for gold and silver.
5. Perhaps exchanged a bearskin for a coat.
5. A barrel of molasses for a pile of pine boards.
4. Musket bullets instead of farthings. . . . .
4. Indians had a kind of money called wampum.
5. Wampum was made of clam-shells.
5. This specie was taken for debts by English.
4. Bank bills had never been heard of . . . .
5. Not enough money to pay ministers.

No child was expected to read the whole story in the time allowed, nor was any one expected to reproduce all the thought read. As shown by Tables I and II, there is a great range of variation, both in the number of words read per second and also in the reproduction of the thought.

The tests were given to all the grades except the first and second. The tests were given in twenty-six rural schools. Of the schools tested, eight were one-teacher schools, seven were two-teacher, seven were three-teacher, and four had three or more teachers. Over nine hundred children in all were given the tests. The schools were selected from different parts of the county, so that they were fairly representative.

RESULTS OF THE TESTS

The results of the tests are shown in the accompanying tables and graphs. Table I shows the number of words read per second, the median read, the standard, the median for the city of San Jose, California, and also the progress from grade to grade. By examining the table, it will be seen that the number of words read per second varies greatly in the same grade. I wish to call attention to the sixth grade, which was given test No. 7. The number of words range from 0 to 8 per second. In the eighth grade, given test No. 7, it ranges from 1 to $8\frac{1}{2}$. The smallest range is found in the fifth grade, where it varies from 1 to 5 words per second.

TABLE I

NUMBER OF WORDS READ PER SECOND, THE MEDIAN, THE STANDARD, AND SAN JOSE STANDARD

Number of Papers	GRADE	No. of Test	0	.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	Median	Standard	San Jose Standard
102	VIII	7	....	....	4	2	6	16	8	20	18	6	6	2	2	4	2	....	2	4	3.4	4.0	3.32
162	VII	7	....	....	....	4	30	28	6	36	16	8	10	2	2	10	6	2	....	2	3.7	3.6	2.7
148	VI	7	4	....	....	10	18	30	36	22	4	6	4	4	2	4	....	2	2	....	2.7	.....	.....
140	VI	5	....	1	3	16	42	16	8	24	8	12	1	1	....	4	....	....	....	....	3.1	.....	.....
168	V	5	....	....	18	22	62	30	20	2	8	4	2	....	....	....	....	....	....	....	1.9	2.8	2.1
168	IV	5	4	3	20	20	68	29	17	1	3	2	....	....	1	....	....	....	....	....	1.7	.....	.....
198	IV	3	2	....	16	36	52	42	22	10	14	....	2	2	....	....	....	....	....	....	1.8	.....	1.8
166	III	3	4	8	40	30	40	22	10	6	4	....	....	....	....	2	....	....	....	....	1.5	2.1	1.5

TABLE II

SHOWING DISTRIBUTION OF POINTS READ, NUMBER REPRODUCED, AND THE MEDIAN

Number of Papers	Grade	No. of Test	0	5	10	15	20	25	30	35	40	45	Median	San Jose
106	VIII	7	2	4	26	32	22	12	4	....	4	....	13	19.2
162	VII	7	4	2	16	40	26	44	18	8	4	....	19	18.5
140	VI	7	6	6	40	48	24	12	....	2	2	....	12	.....
156	VI	5	4	....	8	20	26	52	38	6	6	....	22	.....
169	V	5	3	10	20	41	16	50	21	4	4	....	19	26.0
174	IV	5	2	2	26	38	52	48	4	....	2	....	17	.....
192	IV	3	22	8	44	50	68	....	....	....	....	....	13	15.0
168	III	3	30	22	62	40	10	2	2	....	....	....	7.5	12.5

In comparing the median number of words read per second in the rural schools with the medians for San Jose schools, it will be seen that the rural schools compare very favorably with city schools. The fifth grade falls $\frac{2}{10}$ below, while the seventh and eighth grades score higher than the city schools of that community. But if we make a comparison of both the rural schools of Santa Clara County and the city schools of San Jose with the standardized scores, we find that both fall below, with the single exception of the seventh grade in the rural schools, which surpasses the standard by $\frac{1}{10}$.

Table II shows the distribution of the ideas reproduced, the median, and the median number reproduced in the city of San Jose, California. In the reproduction of the thought, the rural-school children fall below the children of the city of San Jose. There is a very marked difference in the third grade, where the median for the rural schools is 7.5, as against 12.5 in the city. This is not surprising, though, when we note that 30 children out of 168, or nearly 20 per cent, reproduced nothing of what they had read. It will be noted further that 22 children out of 192 in the fourth grade, reading the same story, reproduced nothing of what they had read. An examination of the medians shows that there is a great fluctuation from grade to grade; especially is this true between the sixth, seventh, and eighth grades. All three of these grades were given test No. 7. The sixth-grade median is 12. It rises to 19 in the seventh grade and falls to 13 in the eighth grade.

The range of ability in reproduction is very great. Every grade contains pupils who score 0 in reproduction, while, on the other hand, every grade, except the third and fourth, have pupils who score as high as 40 points.

The variation in the median attained by the pupils of San Jose and those of the rural schools may be accounted for, in part at least, by the fact that the tests were given and the papers scored by different examiners. But, to show that there is a fairly good correlation between the two sets of scores, the writer scored several hundred papers of the San Jose children, and the graphs show the correlations. In working out the percentage of correlation by the "Spearmann Foot Rule," it is shown that the correlation for the seventh grade is 87.5 per cent and for the eighth grade, 91.2

TABLE III

SHOWING NUMBER OF WORDS READ PER SECOND BY DIFFERENT SCHOOLS

No. of Papers	No. of Depart-ments	0	.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	Median
	more than																			
464	III	4	2	14	44	98	102	56	64	26	18	14	4	4	8	4	4	2	2	2.2
252	III	2	1	11	24	60	30	32	26	24	10	2	6	2	16	2	.....	2	2	2.5
360	II	2	12	36	28	100	62	40	34	14	14	8	2	.....	4	2	.....	.....	2	2.0
152	I	2	2	22	26	38	20	12	16	10	.....	2	.....	2	.....	.....	.....	.....	.....	1.33

TABLE IV

SHOWING DISTRIBUTION OF POINTS READ, NUMBER REPRODUCED, AND THE MEDIAN BY DIFFERENT SCHOOLS

No. of Papers	No. of Depart-ments	0	5	10	15	20	25	30	35	40	45	50	Median
	more than												
478	III	10	18	80	120	108	90	30	12	12	.....	.....	15.6
256	III	12	10	38	70	48	51	20	4	4	.....	.....	15.0
368	II	30	10	80	94	78	50	18	8	.....	.....	.....	13.3
160	I	24	8	34	38	22	22	8	2	2	.....	.....	11.7

per cent. Thus there is good correlation, and the differences in the scores obtained should not be as great as is brought out in the medians for the number of points reproduced. It is evident from this that the rural schools do not do as efficient work in reading as do the San Jose schools.

DIFFERENT SCHOOLS COMPARED

Tables III and IV show that the smaller schools in the rural districts do the poorest work. The one- and the two-teacher schools fall considerably below the three- and the four-teacher schools, the three-teacher schools doing the best work, and the one-teacher schools the poorest. This seems to argue splendidly in favor of rural-school consolidation. The small schools are evidently at a great disadvantage. But why the schools which have more than three teachers, and which may be classed as village schools, should fall below the three-teacher rural schools is unexplainable.

CONCLUSION

The following facts are evident from this study:

1. The rural schools of this county fall below the standardized scores in reading, especially in the lower grades.

2. The rural schools in the county compare favorably with the city schools of San Jose in the rate of reading, but both fall below the standard.

3. The rural schools of the county fall below the San Jose schools in the number of points reproduced from the material read.

4. A great variation of ability is shown between individual pupils in every class and grade.

5. Progress from grade to grade is irregular, and even a very noticeable retardation occurs from the seventh to the eighth grade.

6. The one- and two-teacher schools do inferior work in reading, as compared with the larger schools, which are better organized.

THE HEATING PLANT

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In large steam-heated buildings there is usually a great loss in time and in heat efficiency, and an unnecessary expenditure for fuel, on account of lack of a definite firing system.

The record given in the accompanying table is actually taken from that kept by a fireman in a building which has floor space equal to that of twenty-five rooms, each 30 by 40 feet, and where it is necessary that the building be comfortable between the hours of 8:00 A.M. and 5:00 P.M. Where the building is in use earlier, the record should begin earlier, and where it is in use longer, the record should be continued.

With this system as a basis, each one may standardize his own plant. The ensuing explanations followed by the record will

Date	7	O.T.	9	O.T.	11	O.T.	1	O.T.	3	O.T.
Mon., 10	2	65	5	68	5	68	3	68	2	66
Tues., 11	3	58	5	50	5	62	4	64	3	66
Wed., 12	3	50	5	52	5	54	5	38	5	32
Thurs., 13	2	16	4	18	4	19	4	21	4	26
Fri., 14	1	18	4	23	5	28	5	30	5	32
Mon., 24	2	50	3	54	2	56	0	58	0	60
Tues., 25	2	48	3	50	2	56	0	59	0	62
Wed., 26	1	57	0	58	1	58	0	61	0	64
Thurs., 27	2	58	0	56	0	58	0	64	0	60
Fri., 28	1	54	0	48	2	52	0	52	0	52

probably make the system clear. The figures heading the columns show time of record (thus 7 means 7:00 A.M., 9 means 9:00 A.M.) and the letters O.T. stand for outside temperature. The record shows one week of poor firing (accounted for) and one week of good firing, according to this particular standardizing.

The fireman has the following fixed instructions: (1) At least one pound of steam must be recorded by 7:00 A.M. in ordinary

weather, and in extremely cold weather by 6:00 A.M. (2) Cease firing when the outside temperature is 60. (3) The number of pounds of steam carried should always be commensurate with outside temperature.

To obviate incorrectly kept records, it is necessary for someone to check from time to time. Also, there is the fluctuation in pressure to be considered, for in the course of a few minutes, by opening the flue doors and otherwise, the pressure may be materially lowered. The majority of firemen shovel in coal without regard to time of day or weather conditions. When this record is used they cannot do this without detection.

It is desired to stress the fact that this record is easily kept, and that if the explanations are read and the record thoroughly studied the system may be easily understood.